DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 69.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-002673
Date Inspected: 23-May-2008

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island

OSM Arrival Time: 630
OSM Departure Time: 1530
Location: Shanghai, China

CWI Name:	Ye Yong Jun and Lvliqing			**CWI Present:**	☑ Yes	☐ No	
Inspected CWI report:	☐ Yes	☑ No	☐ N/A	**Rod Oven in Use:**	☑ Yes	☐ No	☐ N/A
Electrode to specification:	☑ Yes	☐ No	☐ N/A	**Weld Procedures Followed:**	☑ Yes	☐ No	☐ N/A
Qualified Welders:	☑ Yes	☐ No	☐ N/A	**Verified Joint Fit-up:**	☑ Yes	☐ No	☐ N/A
Approved Drawings:	☑ Yes	☐ No	☐ N/A	**Approved WPS:**	☑ Yes	☐ No	☐ N/A
				Delayed / Cancelled:	☐ Yes	☑ No	☐ N/A

Bridge No: 34-0006
Component: OBG and SAS Tower Fabrication

Summary of Items Observed:

On this date, Caltrans Office of Structural Material (OSM) Quality Assurance (QA) Inspector Joselito Lizardo was present as requested to perform observations on the fabrication of Orthotropic Box Girder (OBG) and SAS Tower at Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China.
The QA Inspector has randomly observed the following activities on these Bays mentioned below;

Bay 2: 77M and 114M Tower Mock-ups, Plate Cutting, Rolling
This QA Inspector observed 114M Tower Mock-up was still having 5 workers outside the mock-up loosening bolts and nuts of tower splice connector plate installed on this mock-up. Cutting machine has no Caltrans job on the table at the moment. On separate location, this QA observed rolling of 1 - 60mm thick plate with marking P223 was on going to correct flatness which seems intended for vertical tower stiffener. On horizontal milling machine, one 65mm thick plate with mark P327B was seen in the machine table. This plate is being beveled with this milling machine and appears to be part of vertical tower stiffener also.

Bay 3: OBG side/bottom panel:
Manual FCAW fillet welding on diagonal open rib stiffener plate at the gantry table for Side Panel SP089-001-021 was observed by this QA Inspector. This is being welded by ZPMC welder identified on ID number 053609. Tack welding of WT stiffener plates for bottom panels BP032-001-001 and BP113-001-001~006 was noted using 4. 0mm electrode THJ506Fe-1. Two ZPMC welders who were tack welding were verified as Zhang Feng ID number 049769 and Wang Zhong Hua ID number 053753. Paint coating was seen ground and preheating was made prior tack welding. At gantry number 1, side panel SP413-001-001~010 and bottom panel BP167-001-008~019 were at the welding table getting ready to get clamped and preheated prior welding. This QA Inspector observed fit up was

acceptable, tack welds were clean and paint coating removed on weld surfaces. Other activities observed that relate to welding were laying/layout of plates on the floor, paint coating removal onto the plate surface, grinding of cut edge of WT's and cutting of W-shape steel to make WT rib stiffeners for SP303, SP196, SP197, SP190 and SP194. Minor repairs on fillet weld of bottom plates BP061-001 was continuing at Bay 4 with one QC showing the repair areas and monitoring weld parameters at the same time.

Bay 4: Tower Diaphragm
The QA Inspector randomly observed ZPMC welder Wu Zhibing ID Number 049804, utilizing the Submerged Arc Welding (SAW) Process in the 1G (Flat Groove) Position with ZPMC WPS WPS-B-T-2221-B-U3c-S-1, to weld the fill and cover pass on butt splice of Tower Diaphragm Sub-Assemblies. The QA Inspector randomly observed ZPMC CWI Ye Yong Jun, monitoring preheat and weld parameters. The QA Inspector also randomly monitored welding parameters during welding of ESD1-SA20-110A and recorded them as follows: 640 amps, 32. 0 volts with a travel speed of 530 mm per minute. Weld parameters appeared to comply with contract requirements.

This QA randomly observed heat straightening of bottom plate BP034(A)-001 weld numbers 001~036 being performed by ZPMC personnel due to welding distortion. Oxy-acetylene gas was used and procedure HSR1(B)-969 with less than 600 degree C thermal heat input was implemented. Carbon arc air/back gouging on splice plate groove joint on one diaphragm plate after flipping upside down was noted and tack welding of run off tab of diaphragm ring SSD1-SA335 observed. ZPMC welder Wang Jian ID number 067081 was welding the tacks using shielded metal arc procedure WPS-B-P-2314-TC-P4. ZPMC QC/CWI was observed checking welding parameters and readings taken at the time appears to comply with project requirements.

Bay 7: OBG - Floor Beam Sub Assembly:
The QA Inspector randomly observed ZPMC welders Xie Jin Xia ID Number 048038 and Chen Chuanzong ID number 044824, utilizing the FCAW Process in the 1G (Flat Groove) Position with ZPMC WPS WPS-B-T-2231-TC-U4b-F-1, to weld root pass on plate splice butt joint of two unequal thicknesses of 18mm and 14mm using drawing weld detail WD20A on floor beam Sub-Assembly FB022-001-079. The QA Inspector randomly observed ZPMC CWI Hu Wei Qing monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 280 amps, 30.0 volts with a travel speed of 533 mm per minute. The weld parameters appeared to comply with contract requirements. Tack welding was also observed on this same type of splice butt joint using shielded metal arc electrode THJ506Fe-1 by welder Liu Daiquan ID number 066401 on FB024-001-079.

The QA Inspector randomly observed ZPMC welder Zhang Liang ID Number 067036 utilizing the FCAW Process in the 2F (Horizontal Fillet) Position with ZPMC WPS WPS-B-T-2132-3, to weld gusset stiffeners to the web on Floor Beam Diaphragm Sub-Assembly FB003-057 weld numbers 069/070, 013/014, 077/078 and 037/038. The QA Inspector randomly observed ZPMC QC Xiang Feng Feng monitoring weld parameters. The weld parameters appeared to comply with contract requirements. Other welding activities that were observed on this floor range from laying/layout of plates, fit up of various gusset/stiffener plates, bevel cutting of plates and grinding/cleaning of root weld on splice plates.

This QA Inspector observed paint coating on four gusset connector plates to bottom flange of floor beam FB003-014 and FB003-009 still not removed. Although these are only tack welded they should be ground and

paint coating removed prior welding. On four skewed CJP of these connector plates, welding was already done on one side of the weld and back gouging was continuing when this QA Inspector visited the area.

Bay 8: Tower Diaphragms
The QA Inspector randomly observed ZPMC welder Xiao Wenyuan ID Number 058482, utilizing the FCAW Process in the 3G (Vertical Groove) Position with ZPMC WPS WPS-B-T-2233-B-U3-F, to weld diaphragm ring splice plate butt joint to the Tower diaphragm Sub-Assembly ESD1-SA-226 weld 4A. The QA Inspector randomly observed ZPMC CWI Lvliqing monitoring weld parameters. The weld parameters appeared to comply with contract requirements.

The QA Inspector randomly observed ZPMC welder Ma Ying ID Number 045270, utilizing the SAW Process in the 1G Position (Flat Groove) with ZPMC WPS WPS-B-T-3221-B-U3c-S-1, to weld the fill pass in plate splice butt joint ESD1-SA348-10B of Tower Diaphragm Sub-Assembly. The QA Inspector randomly observed ZPMC CWI Lvliqing monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 628 amps, 31.2 volts with a travel speed of 483 mm per minute. The weld parameters appeared to comply with contract requirements.

This QA observed bending of various sizes and shapes of heavy metal for diaphragm ring. Plates being bent were P247A(E)-4/23(A) and P247A(N)-4/23(H) using natural gas of less than 650 degree C thermal heat input with the aid of hydraulic ram and welded jig. The procedure HSR1(T)-1648 and HSR1(T)-1650 are being implemented respectively. Bevel cutting/grinding on these heavy metal plates were also noted. Other activity observed that is related to welding includes flush grinding/cleaning of groove weld cover of diaphragm ring ESD1-SA226 welds 7A and 6A.

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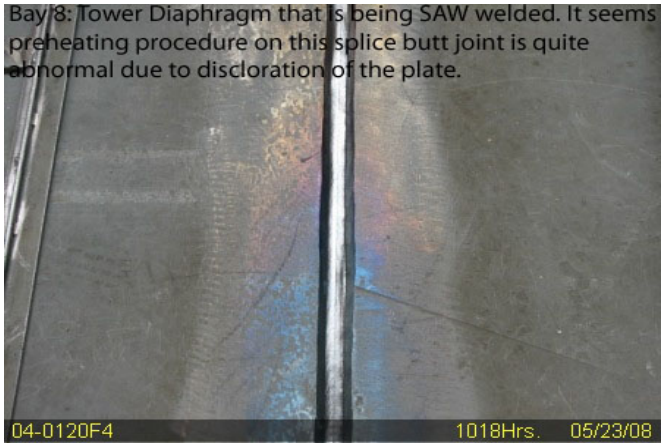

Summary of Conversations:

No significant conversation ocurred today.

Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

Inspected By:	Lizardo,Joselito	Quality Assurance Inspector
Reviewed By:	Cochran,Jim	QA Reviewer